approach

NOVEMBER 1983 THE NAVAL AVIATION SAFETY REVIEW

Cheating Ourselves

WE take a lot of tests in naval aviation: instruments, tactics, aircraft systems and recognition, just to name a few. We take them for individual qualifications, readiness evaluations and competitive exercises. These tests are chances for us to demonstrate minimum levels of knowledge needed to fly our aircraft safely and successfully complete our missions. Properly used, they can give us confidence and point out problems. But these values sometimes get obscured by other factors.

Exam scores affect individual fitness reports and command standings for awards such as the battle "E." No one wants to be low man when the score sheets are posted or hold his squadron back in a competition. Sooner or later many fliers find themselves in a bind. The big test is coming up, and they just haven't found the time to study for it. Or the squadron is facing a competitive test knowing that a few points could make a big difference in getting an award. It becomes easy to generalize the old combat motto, "If you ain't cheatin', you ain't tryin'," and apply it to this situation.

Let's face it. You can get the "gouge" to most exams if you want it badly enough. There is usually a copy of last year's test lying around somewhere and most of the time it hasn't been changed. When that fails, there is often the friend of a friend who is administering the test or the unlocked drawer. But by far the easiest method is what is jokingly referred to as "crew concept." While some exams are properly taken with crews answering questions together, this license is often taken on individual exams, where the "crew" is whoever happens to be sitting on either side of you.

There are a number of rationalizations that cheaters use to try to justify these actions. They go something like this: "I know what I need to know to fly my aircraft. I wouldn't be here now if I didn't, right? But these tests — a lot of the questions are B.S. that you never need. I could *pass* without the gouge, just by answering the important stuff. But if the gouge is out, everybody's going to use it, and those that don't will look like non-hackers."

As with any rationalization, it contains some truth, but mostly fiction. It also raises more questions than it answers. Do you *really* know everything you need to know to fly safely? If you cheat you won't have to face the possibility that luck, more than knowledge, may have been keeping you alive. Are the questions irrelevant? If they are, has anyone submitted proposed changes to the test writers? Is "everybody else" really cheating also, or do their high scores simply show that they were better prepared? A low score may mean that you *are* a non-hacker. But it would be better to find that out on the ground, than in the air. It would be better still to do something about it.

Lt. John Flynn
Editor

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inside approach

Vol. 29 No. 5

The third AV-8B preproduction aircraft flies a low-level/bombing mission. Photo by Randy Hepp of McDonnell Douglas.

FEATURES

DEPARTMENTS AND STORIES

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Capt. H.A. Petrich, Chief of Staff
Capt. S.P. Dunlap, Director, Aviation Safety Programs
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The Harrier II Arrives

By Doree Martin
McDonnell Douglas Corporation

THE first AV-8B *Harrier II* close air support squadron is starting to form at the Marine Corps Air Station, Cherry Point, NC, two years prior to it becoming operational in the fall of 1985. McDonnell Douglas recently delivered the first of 12 pilot-production AV-8Bs to Cherry Point. By this time next year, the U. S. Marine Corps will be equipped with 11 more AV-8Bs. The delivery of these 12 aircraft will be followed by 21 limited-production AV-8Bs, bringing the total number of *Harrier IIs* stationed at Cherry Point to 33 by 1985.

As Marine Corps pilots begin to learn how to fly the AV-8B, they will find themselves at the controls of the most advanced V/STOL (Vertical/Short Takeoff and Landing) jet in the world. What will they find? Will the AV-8B be easy to fly? What will the workload be like? Will it be safe? Will it get the job done?

Charlie Plummer, chief AV-8B test pilot at McDonnell Aircraft (MCAIR), a division of McDonnell Douglas, and James M. Korte, MCAIR section chief for systems safety engineering, answered these questions during a recent interview for *Approach* magazine.

QUESTION: Is it easy for a new pilot to fly the AV-8B? And if so, why?

PLUMMER: The only way to quantify that question is to compare the AV-8B with its predecessor, the AV-8A *Harrier*. They are two very different airplanes although they have a similar planform. When we first flew the prototype, I said the workload of the YAV-8B in V/STOL flight was about one-third of the AV-8A. Now, that is even further reduced in the AV-8B. Overall, the AV-8B is much easier to fly than the AV-8A, and in V/STOL, I'd say the total workload, mental and physical is reduced by 80 percent. The physical workload is low by comparison to the AV-8A. For example, the workload involved while flying the AV-8B in traffic patterns compares favorably to other modern conventional fighters.

One of the major contributors to the reduced workload is not physical, but mental. There has been marked concern about V/STOL handling in the AV-8A, although that concern among non-AV-8 pilots has been perhaps out of proportion to the problem. Nevertheless, it's true the AV-8A model requires significantly more pilot attention than most fighters in the traffic pattern. This concern has been generated primarily by roll-due-to-yaw and insufficient aileron power. The AV-8B has twice the roll power and one-third to one-half the roll-due-to-yaw tendency as the AV-8A at similar flight conditions. Full rudder sideslips at 100 knots and approach angle-of-attack (10 degrees) require only slight lateral stick to maintain wings level. This means the pilot's attention required during transitions and approaches is significantly reduced, resulting in a more relaxed pilot.

Other design changes also resulted in lower workload. The AV-8B's high lift configurations provide wing lift at low speeds, thus reducing the time spent flying on engine lift only. Large amounts of wing lift are produced by the time 40 knots is reached, consequently, a transition from a heavyweight vertical takeoff is much easier to accomplish.

During decelerating transitions, power requirements are low until 60-70 knots is reached, and maneuvering margins are large. Because of the reduced roll-due-to-yaw tendency, the aircraft can be comfortably maneuvered as required. Also, the crosswind effects are low, and again, overall workload reductions result.

QUESTION: How have these improved design features affected the AV-8B's safety and flying qualities?

PLUMMER: I've already mentioned the high lift configurations and the effect on workload. Let me be a little more specific. The AV-8B has a supercritical airfoil. This shape permits a relatively thick wing section which serves to provide both high lift and high fuel volume while still allowing for reasonable transonic speeds. Very large flaps which travel down to 60 degrees are installed as well as ailerons which droop to 15 degrees. When the flaps and ailerons are fully down, the lift provided is very high even at very low speeds. During a transition from hover to wingborne flight, that lift can be noticed at speeds as low as 30 knots. There are several ways that lift can be used:

First, if the power remains full on, a very fast level transition to wingborne flight can be made, or a climbing transition can be made with a slightly slower nozzle rate.

Second, the power can be reduced significantly at low speeds while making a normal transition to wingborne flight. We find that power reductions can be made even at max gross hover weight by the time 40 knots is attained.

Many other design features are incorporated to help reduce pilot workload and improve safety. One of our pri-

McDonnell Douglas

AV-8B number five, the first of 12 production *Harrier IIs* to be delivered to MCAS Cherry Point.

mary tasks was to provide systems support to the pilot which would allow him to concentrate fully on the mission and not spend excessive time in just handling the airplane. Some of those systems have just been discussed. Additional improvements include:

First, the Stability Augmentation and Attitude Hold System (SAAHS) — the stability augmentation system works throughout the flight envelope. The autopilot system works in the same flight envelope although with variations according to speed, height and task. Heading hold, attitude hold and altitude hold are all available.

Second, the All-Weather Landing System (AWLS) —this is still under development, but it is flying. The system provides guidance and level-off commands to a point where a transition and vertical landing can be made.

Third, a modern cockpit having hands-on-stick-and-throttle weapons control; up-front computer entry and avionics control; heads-up displays which include engine, flap and nozzle parameters; inertial navigation; and excellent over-the-nose and side visibility contribute to pilot comfort and workload reduction.

QUESTION: What other features have been incorporated to enhance safety?

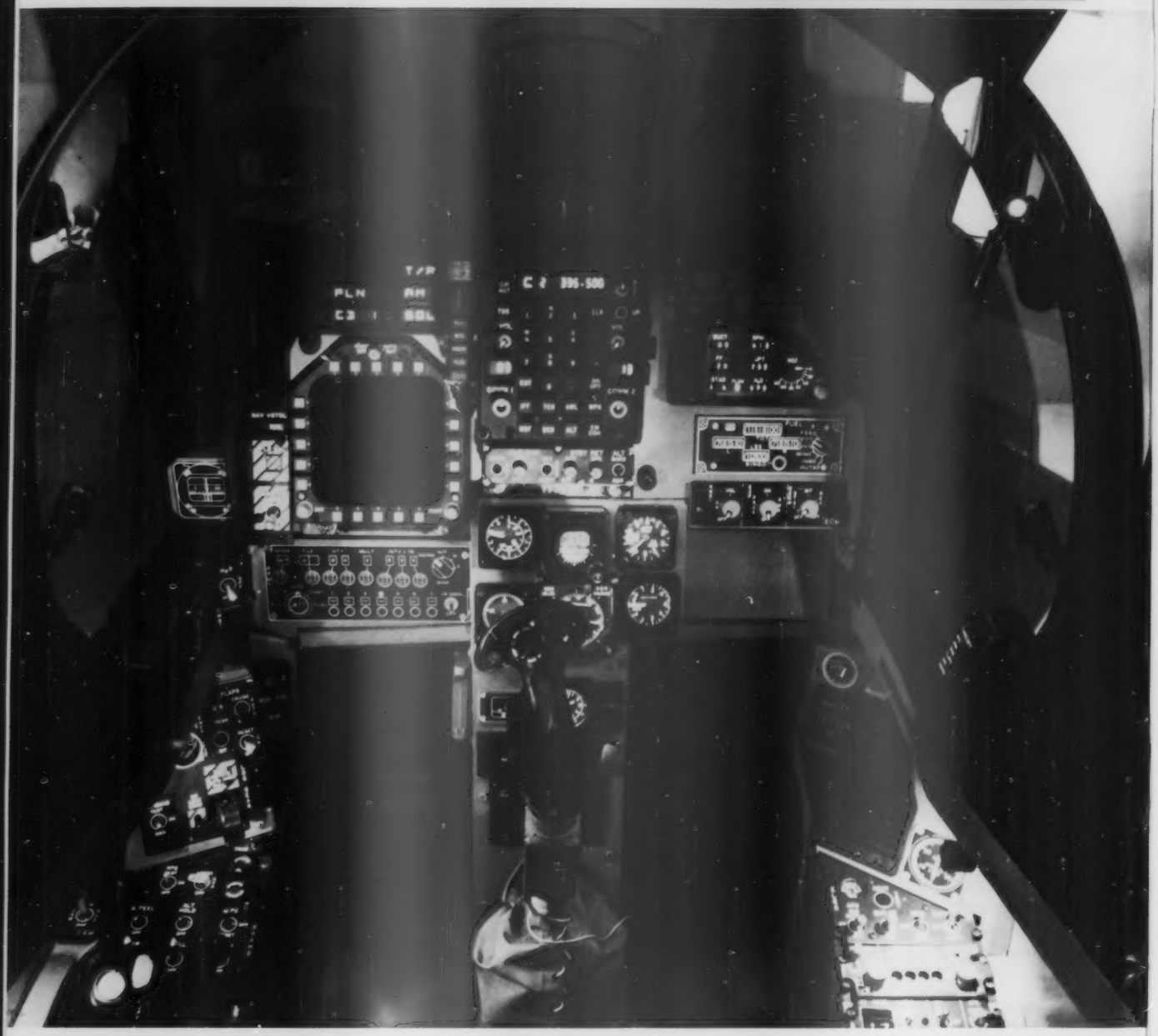
KORTE: Actually, many features in the AV-8B design will improve safety-of-flight. One of the key items is the inflight capability of the auxiliary power unit (APU). This provides emergency AC power for a safe recovery in night, instrument and icing conditions. Other important features include a redundant airstart circuit, override spring cartridges in the pitch and roll control system which reduce the potential for jams, pitot-static system redundancy, an on board oxygen generating system (OBOGS) which replaces liquid oxgyen, and a new warning/caution/advisory system which gives a pilot vital aircraft and system status information.

QUESTION: What aircraft maintainability features will lead to improved safety?

KORTE: Our systems safety engineering group has worked closely with our maintainability group. Together, we have added many features which will help maintenance personnel accurately determine the health and readiness of the aircraft. The most significant item is the extensive use of maintenance built-in-test (BIT) capabilities for avionics, fuel gauging and antiskid. The aircraft also has numerous gauges and indicators for fault cueing. An example of these are tire pressure gauges for the main and wing landing gears.

More than 9,000 pounds of bombs can be carried on seven external stations.

McDonnell Douglas



A mockup of the AV-8B cockpit.

QUESTION: How has the systems safety engineering group contributed to the improved safety of the AV-8B?

KORTE: We are responsible for developing and implementing a system safety program for the AV-8B design, development and subsequent production phases. The purpose is to provide an aircraft weapons system incorporating the maximum degree of safety within the constraints of cost, performance and schedule. This is accomplished by identifying, tracking and resolving areas of safety concern. This effort is supported by many hours of component, subsystem, and system design and qualification testing, wind tunnel evaluations, manned simulations including failure mode testing and training and full-scale development testing.

QUESTION: How do these activities lead to safety improvements?

KORTE: These activities allow us to clearly identify, define and rank the dominant factors involved in both actual and potential mishaps. After we have thoroughly assessed each item, we formulate solutions and recommend incorporation of the improvements into the aircraft design. Occasionally, changes to the maintenance publications, flight manuals and training program requirements are recommended.

QUESTION: How do you think the safety record of the AV-8B *Harrier II* might eventually compare to the AV-8A?

KORTE: The AV-8B should have a much better safety record because we have learned many lessons from previous *Harrier* experience and have applied them to the AV-8B design.

Our lessons first began in 1969, when the British *Harrier,* the GR Mk 1, entered service with the Royal Air Force. We have more than 14 years of experience with *Harrier* aircraft, in which 12 of those years have been spent closely studying the AV-8A in an operational environment with the U. S. Marine Corps.

Few, if any, modern aircraft development programs can boast of a comparable experience base.

QUESTION: Will your systems safety engineering group maintain contact with fleet personnel after the AV-8B is delivered to Cherry Point?

KORTE: Yes, because effective communications after delivery is essential to the success of the AV-8B, as it is on all MCAIR programs. The AV-8B team has developed an aircraft capable of performing its mission while maintaining a superior safety record. This team, which includes our safety group, will work closely with the new members who are joining us. These new members, who will also share in the responsibility for the safety of the aircraft, are the Marine pilots who will fly it and the ground personnel who will maintain and support it.

QUESTION: What type of flight trainers will pilots be using to learn how to fly the AV-8B? Will this type of training make a safer introduction of the aircraft into the fleet?

KORTE: MCAIR is developing several of the elements needed to support the integrated pilot training system. These items include preliminary NATOPS flight manuals, formal ground schools and flight trainers. In this regard, the Navy Training Equipment Center located in Orlando, Florida, has awarded MCAIR a contract to provide a suite of three pilot training devices. These include an aircraft systems trainer and two flight simulators — an operational flight trainer and a weapons tactical trainer. They will be used for primary transition training as well as refresher training, and consequently, will reduce the potential for pilot-error accidents by providing a safe and cost effective method of training.

Also, a full complement of maintenance trainers are being developed for various aircraft systems. These will enhance the quality of maintenance training and reduce the potential for maintenance-error related mishaps.

QUESTION: Will this complete the training package?

KORTE: No, we believe the two-seat trainer, the TAV-8B, will significantly improve the quality of pilot training. The TAV-8B will have all of the safety improvements which were designed into the AV-8B, and the forward crew station will be virtually the same. The two-seat trainer will make it easier for a pilot to transition into the single-seat aircraft. Early availability of the TAV-8B will enhance the safe and orderly transition of pilots into the AV-8B.

QUESTION: What advice would you give to pilots who will be flying the AV-8B?

PLUMMER: The AV-8B is a new airplane from nose to tail and wingtip to wingtip. Many systems are similar to the AV-8A but vastly improved. The AV-8A and AV-8B also have similar planforms: reaction controls, a variable thrust vector and Rolls-Royce Pegasus engines. Yet, they are very different airplanes.

The pilots who transition to the AV-8B should maintain an objective point of view, striving not to bring preconceived ideas or other airplane habits to the AV-8B. As pilots gain experience, they will generate new and unique methods and techniques for employment of the aircraft.

The AV-8B is easy to fly, comfortable, can carry a very large load, and is proving to be reliable, effective and safe. I believe the new AV-8 pilots will be favorably impressed.◄

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6 **A Flock of Birds.** "Hours and hours of boredom interspersed by moments of stark terror" is an old adage that all aviators know well. However, an engine failure during a section go, immediately following liftoff with subsequent entry into IMC in mountainous terrain, definitely does not fit into the category of "boredom."

This is exactly what an F-4 *Phantom* crew from MCAS El Toro experienced recently. Col. M. P. Sullivan and his RIO, Capt. Daniel Chwalisz, were the wingmen on a scheduled all-weather intercept mission. Flying formation on the starboard side during a section takeoff, Sullivan's attention was drawn to a large flock of birds coming up into the flight from the right side of the runway. When the gear signal was given, there were sounds of multiple impacts and heavy airframe buffet as the flight flew through a mass of sea gulls.

A quick glance at the engine instruments confirmed that the progression of yaw developing to the right was due to the loss of the starboard engine. It was also noted that the PC-2 hydraulic gauge indicated zero pressure. The starboard engine was shut down in accordance with NATOPS procedures. With full afterburner selected on the port engine, Sullivan nursed the single-engine *Phantom* to 200 knots, raised the flaps, and established a positive rate of climb. Lead accelerated out in front and entered the 1,300-foot overcast. Sullivan determined a safe climb could be maintained and elected to retain the external stores, but was prepared to jettison the centerline tank if the situation dictated. A gentle turn to the right was initiated to avoid the rapidly approaching terrain while climbing slowly into the overcast. While the crew discussed its options, VMC was achieved at 5,000 feet. A return to El Toro was not considered a reasonable option due to the weather conditions, the uncertain condition of the port engine and the densely populated areas surrounding MCAS El Toro.

The best option appeared to be an emergency divert to either NAF El Centro or MCAS Yuma. This allowed the flight to stay VMC and fly a route that placed the aircraft over non-populated areas in case of further problems. Lead joined up and inspected the exterior of the aircraft for possible leaks and airframe damage while advising Los Angeles Center of the flight's intentions. An uneventful single-engine landing was made at MCAS Yuma.

Postflight inspection revealed: the starboard engine inlet guide vanes were completely gone, as were most of the first two stages of the compressor blades. Several holes were found in the compressor case and engine parts were found in the engine bay. At least one bird was ingested into the port engine, but no FOD damage was found. Birdstrikes to the radome, left quarter panel of the front canopy, nosewheel door, leading edge flaps and intake ramps were noted. Additionally, a FOD walkdown of the departure runway turned up a shopping bag of engine parts and sea gulls. The PC-2 failure was due to the sudden stoppage of the starboard engine, shearing the drive gear to the PC-2 hydraulic pump. Kudos to this aircrew.

Banana Time. What follows is an anecdote from Flight Safety Focus which we think you'll find unusual. It proves that what you hear in an airborne aircraft isn't always what you might think.

An A300 Airbus crew, while cruising at FL270 with an indicated airspeed of 300 knots, suddenly became aware of strong rhythmical noises which were being felt all

AIR BREAKS

over the aircraft. They suspected an engine stall, but all engine instruments were showing normal values. Seeking some answers, they slowly retarded No. 1 throttle, and the noises stopped. When the throttle was advanced again, the noises immediately resumed. The throttle was then pulled back to idle, but this time the noises continued. It was their judgment that the engine should be shut down, which they did according to procedures.

As expected, the noises stopped. Three minutes later, however, they started again. Noting all readings normal on No. 2, the crew began shutting down bleeds and packs, no changes. They then restarted No. 1 . . . and the noises stopped! They started again a few minutes later and cycled on and off at about 30-second intervals for the remainder of the trip. The landing was uneventful.

When a postflight inspection revealed no clues as to any mechanical origin of the problem, suspicion began to focus on four passengers traveling in a special lower deck compartment. Investigators deduced that these passengers grew hungry during their flight and had expressed their displeasure by banging on the bulkheads. The resulting noise was a reasonably authentic imitation of an engine stall. When questioned about this behavior, the miscreants simply smiled and grunted. They were verbally reprimanded and dealt with accordingly. The cargo manifest described them simply as "Four apes . . . total net weight 600 kg."

It is unlikely that Navy aircrews will encounter simian cargo, but there is a lesson to be learned here, nonetheless. Recent message traffic indicates that hazardous cargo is still being loaded on naval aircraft without the aircrew's knowledge. What is needed is a concerted effort on the part of all personnel involved with aircraft cargo handling to make sure that hazardous materials are properly marked and documented on the manifest. — Ed.

"Your Nose Gear is Down but Not Locked, and Your Main Gear did Not Come Down!" This was the call Capt. Charles T. Moseley, pilot, and Ist Lt. Leland W. Maxey, RIO, of VMA 232, received from their wingman when they tried to lower the gear of their F-4S on an approach to landing at Kadena AB, Okinawa.

As Moseley lowered the landing gear handle a complete utility hydraulics failure was experienced. Up to that time there was just a CHECK HYD light and fluctuations of 300 to 500 psi on the utility hydraulics gauge.

Moseley broke off the approach and climbed until VFR on top to join up with his wingman. Once rejoined, Moseley and Maxey tried to blow down the gear in accordance with NATOPS. This resulted in the nose gear indicating down and right main down about two inches with a barberpole and the left main gear up and barberpoled. Numerous attempts were made to drop the gear; all of them failed.

Moseley made a section approach and landed his wingman. He then circled the field and made three practice approaches to the BAK-13 gear on Runway 23R. The final approach and subsequent trap were flawless as the aircraft was landed on its three tanks and nose gear 500 to 800 feet prior to the BAK-13.

A well-done to Moseley and Maxey for their flawless airmanship.

The Errant Parachute. Twenty minutes into his second fam flight, the T-34C pilot entered into a series of aerobatics which included wingovers, loops, barrel rolls and spins. Recovery from the third spin was initiated after four right turns. As the yaw rate stopped, the pilot felt a pronounced thump through the control stick. The pilot then kept control stick movement to a minimum and recovered from the spin at 6,000 feet MSL and 150 knots.

The flight was aborted when the pilot determined that slight movement of the stick required noticeably greater force than normal. During the transition to landing, the pilot was able to trim out control forces of 30 pounds. An emergency was declared, and a full stop GCA was flown.

The postflight inspection revealed that the rear parachute had slid from behind the seat shoulder straps, fallen forward and entangled the rear cockpit control stick in the left parachute shoulder harness. If the shoulder restraint straps are not routed through the parachute harness, the parachute is free to not only jam the flight controls, but the throttle and fuel controls also.

In any of these cases, the loss of aircraft and aircrew is easily envisioned, especially during recovery from unusual attitudes and spins. For this very reason, the T-34C NATOPS carries the warning, "Failure to secure the rear cockpit for solo flight may result in restriction of flight control movement." ◄

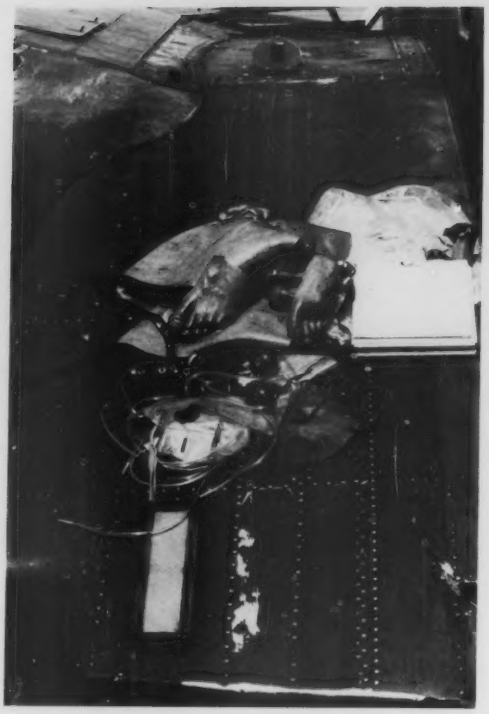
crash course

AN AIRCRAFT MISHAP MINI-DRILL

By Russ Forbush
Approach Writer

On 4 August 1983, NAS Norfolk conducted an aircraft mishap minidrill. The hulk of an H-53 helicopter was on hand as the simulated crashed aircraft. The Hampton Roads Medical Center Branch Clinic, Sewells Point provided nine NAS Norfolk personnel, who would serve as mishap passengers, with tags depicting typical aircraft injuries/trauma, i.e., burns, fractures, concussion, unconsciousness, severed limbs, etc.

All photos by
PH2 Ron Bellenot, USN
Naval Safety Center



THE underpart of the H-53 tail section was resting on the legs of a dummy which simulated a 10th passenger. Some personnel were asked to don moulage kits to help add a bit of realism to the more serious injuries. A female passenger was instructed to feign hysteria upon arrival of the firefighting and rescue personnel. This will be discussed later in the article. Four hot burn/smoke barrels were set up in front of the H-53 to simulate an aircraft fire.

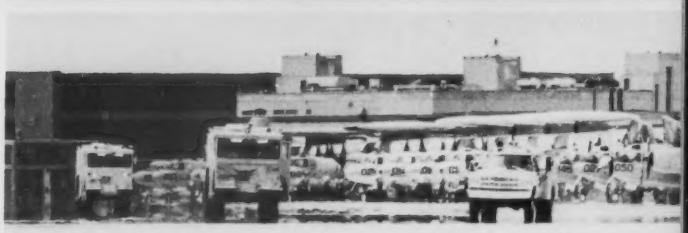
About 1245, the mishap passengers were positioned in and around the H-53, and the barrels were doused with gasoline and ignited by firefighting personnel.

At 1258, an airborne CH-46D from HC-6, simulating the H-53, got the minidrill underway when the crew broadcast the following:

"Chambers Tower, this is a drill, this is a drill, Hotel Whiskey 01 has an engine fire and smoke, attempting a landing on the seawall at SP-31."

Shortly thereafter Hotel Whiskey 01 transmitted, "Chambers Tower, this is a drill, this is a drill, Hotel Whiskey 01 has 10 souls onboard, declaring mayday, mayday, this is a drill."

Chambers Tower immediately activated the primary crash phone circuit and transmitted, "This is a drill," followed by pertinent information relative to the simulated crash which had just occurred. All firefighting, rescue and medical personnel were responding by 1259. Security personnel manned the perimeter of the crash site to prevent nonparticipating personnel from penetrating the area.



Just after 1300, two fire engine tankers, three crash and rescue trucks and the assistant fire chief arrived at the crash site. The tankers moved into position and commenced spraying the simulated aircraft fire. A command post had been activated, and the word was passed for the rescue of passengers to begin. A rescueman garbed in his crash and rescue suit was the first to approach the H-53. As he neared the aircraft, the passenger assigned to feign hysteria approached from the simulated wreckage and grabbed the man. She was screaming incoherently and clinging to his silver outfit. Not expecting *hysteria* in a *drill,* he was somewhat surprised by this, but managed to free himself and continue. Several other crash and rescue personnel then headed for the H-53 to assist in the removal of passengers from the helo.

At 1308 the fire was declared out and crash and rescue personnel started checking the passengers in and around the H-53 to assess their injuries. First aid kits were used to dress

the simulated wounds and assistance was rendered to those passengers suffering trauma. The passengers were playing their roles well by screaming and groaning and, in general, acting like real crash victims. The tags were checked on each passenger and as the first aid treatment was completed, the passengers were moved by stretchers to an area away from the H-53.

At this point, a crane which had been requested arrived to lift the tail section off the dummy. Medical personnel were now on the scene. They included several hospital corpsmen and a medical officer. A triage area was set up and each of the passengers was brought there to be diagnosed by the doctor. In the meantime, the crane was fitted with a sling which was then attached around the H-53 tail section. The crane lifted the tail, and the dummy passenger was pulled to safety.

During this action, an aerial ladder truck and a fire truck hauling a foam trailer arrived in the area. When the body

count and injury classifications were determined, this information was passed from the command post to Chambers Tower. The command post was then asked to provide more backboards and stretchers. An additional ambulance (simulated) was also requested.

Chambers Tower then asked the command post if they required helicopter MedEvac and the reply came back "send it" (simulated). It was determined that three passengers were seriously injured. They were ticketed to be flown to a hospital for treatment. One of the passsengers was declared (simulated) fatally injured. Five other passengers were to be transported to the clinic by ambulance.

The "crash course" secured at 1340.

The way this aircraft mishap minidrill was planned and conducted was impressive. The participants were most serious in carrying out their assigned duties, especially considering the extreme summer heat and the fact that they knew this was a drill. A lot of activity by a lot of people took place during this drill, and it's hard to believe it was over in 40 minutes. The training gained by all who participated can't help but be of use to them should they be called upon to respond to an actual aircraft mishap or other catastrophe. Qualified evaluators were on hand to record the strong and weak points associated with the exercise. Deficiencies

detected will be discussed with the participants and future drills planned by NAS Norfolk should eliminate them.

Captain G. H. Hesse, USN, Commanding Officer, NAS Norfolk, had these words to say when queried about his reaction to this type of drill:

"This drill exceeded my expectations. As this was the first drill on record at Naval Air Station, Norfolk, we advertised a training drill where we could learn by our mistakes without external grading or help. We gained a great deal of confidence, and visibility was gained for the entire premishap organization as we walked through the scenario. This drill involved only immediate response players. Future scenarios will add complexities and test players more accurately. My nervous jitters were in vain because, as usual, the Navy team came through with flying colors. We video taped the entire program, and we will share our experiences with counterparts as we complete the wrap-up. Don't be worried about scheduling a drill but do it right to build confidence by keeping the first one simple."

Each year the crash alarm is sounded at many Navy and Marine Corps airfields. The expertise of all those charged with responding to the mishap is a determining factor in the minimizing of personnel injury and aircraft damage. An effective airfield premishap plan and periodic drills can do much to ensure that this expertise is gained and then maintained.

Aircraft Evacuation: What Now?

By Lt. Ray Desvousges
VP-24

We now had an unknown danger — the airport crash crew. Barreling down the dark runway were four large firetrucks and assorted emergency vehicles. The drivers of these firetrucks had been practicing diligently for this moment. Their sole purpose in life was to arrive on the scene as quickly as possible, surround the burning aircraft and extinguish the fire. During all their training, apparently someone failed to mention that P-3 aircrews would muster directly behind the aircraft. As the rescue vehicles converged upon us, we soon realized this new danger and proceeded to clear the runway.

We later thought of another hazard. We had evacuated the aircraft for a fire, but remained relatively close to a potential burning airframe loaded with 55,000 pounds of jet fuel. What would be a safe distance? Surely not 75 feet. Clearly, this emergency was not over when we thought it was.

Soon after a ground emergency of this nature, the runway or taxiway will be a veritable speedway full of emergency vehicles. Get out of the way and allow them to do their job. There is no need to have a closeup view of a possible aircraft fire. Ensure that your crewmembers stand *well clear* . . . their lives may depend on it.

ASW aircrews in the P-3C *Orion* spend long hours learning emergency procedures and conducting emergency drills. One of these evolutions is the safe evacuation of the aircraft during ground emergencies. This procedure is a simple one. Once the decision is made and the engines are secured, the flight station gives the command to evacuate. The crew then exits over one of the overwing hatches and musters aft of the aircraft. The emergency is now over or is it?

Case in point: Our crew had a late night operational flight in the Mediterranean. The aircraft was in position on the active runway in preparation for takeoff. Suddenly, a flame about one-foot high erupted from the base of the pilot's windshield. The cockpit crew rapidly determined it to be an electrical fire and secured power to the windshield heat. At the same time the tower was notified of a fire in the cockpit, and the third pilot manned the forward fire bottle. A few seconds later, the flames subsided. The engines were shut down, and the crew exited through the overwing hatches in accordance with NATOPS without incident. All 13 crewmembers mustered about 75 feet behind the aircraft. A quick accounting determined that no one was injured, and best of all, they were *safe* or so we thought!

Blue water SAR*

By Lt. Steve Ambrose
VAW-116

"Hawkeye 600 this is Strike, do you hold 001? Last radar contact was 180 degrees for 186 miles."

"Negative, 600 is proceeding south to initiate search."

"Mayday, mayday this is 001 . . ."

If you have never heard that last call before, consider yourself lucky. If you have, you know how quickly a situation can deteriorate. What follows is an account of an actual SAR from the SAR mission coordinator's point of view.

It was a balmy summer day in the middle of the Indian Ocean. The crew of Hawkeye 600 was coordinating several exercises in conjunction with Weapons Week around Diego Garcia when they were contacted by the carrier strike controller. Aircraft 001 was overdue for the scheduled recovery, and the CV feared that it might be lost. The Hawkeye, which had been stationed north of the ship, proceeded south in an attempt to establish communications and radar contact, at the same time advising Strike to prepare for a SAR effort. The area of search was extensive since aircraft 001 had been on an isolated mission 250 miles south of the battle group.

As the E-2 continued south, numerous attempts were made to contact 001 on Strike and Guard frequencies. Two aircraft which had just launched were available to assist in the search. All other airborne assets were either recovering or continuing on assigned missions.

As the calls on Guard continued, nearly every aircraft on the ensuing launch checked in with the Hawkeye, offering assistance as a SAR asset. To avoid confusion and to maintain some semblance of order, the mission commander used only the original two aircraft under his control and a section of S-3s. It was during this time of sorting out assets that an intermittent Guard beacon was heard. As soon as the signal became constant and strong, attempts were made to triangulate the source. A P-3 from Diego Garcia also offered its assistance.

A search area, approximately 20 nm in diameter, was initiated and voice communications with the downed survivor were established. After a period of time, a probable location was derived and subsequently an S-3 obtained a visual sighting. A helo from the CV was launched to effect pickup, and a second P-3 from Diego Garcia dropped a SAR kit. It would take close to an hour for the helo to reach the downed crewman. The survivor was never able to reach the SAR kit due to the high sea state, although the raft provided a drift reference for the remainder of the search. The helo arrived on scene and effected a textbook recovery. With additional information from the survivor, a search continued with renewed vigor for any remaining crewmen.

The original SAR mission coordinator had been relieved on station by a second E-2. By now a third E-2 crew had assumed the duties and coordinated the search. Using the survivor's pickup area as a reference, the coordinator controlled three aircraft in a circle centered on that point. The two S-3s were double or triple-cycle capable, and the P-3 had a 10-hour on-station time. Sunset came, and the search area was expanded to a 50 nm radius centered on the pickup location of the survivor. This is nearly 8,000 square miles of ocean, roughly the size of New Jersey. All SAR aircraft were parachute-flare equipped. However, the flares were used only if there was reason to suspect that someone might be in a particular area.

Under E-2 control, S-3s and P-3s continued a ladder search throughout the night. *There were numerous instances in which an aircraft would hear a Guard beacon for three to eight seconds, usually not long enough to obtain a fix. Most of these were traced to the CV where manning aircrews were testing their PRC-90s.*

The CV battle group arrived in the search area at sunrise, assumed the duties of SAR coordinator and stood down the E-2s and S-3s. Having received Link 11 during the transit south, the CV had real-time information to plan its action prior to arrival. For the remainder of the day, the CV controlled A-6, A-7 and F-14 aircraft on sector searches. All sectors overlapped, and all aircraft were assigned hard altitudes to preclude the possibility of a midair. The search was thorough, but no signs of aircraft wreckage or additional

*search and rescue

survivors were ever discovered.

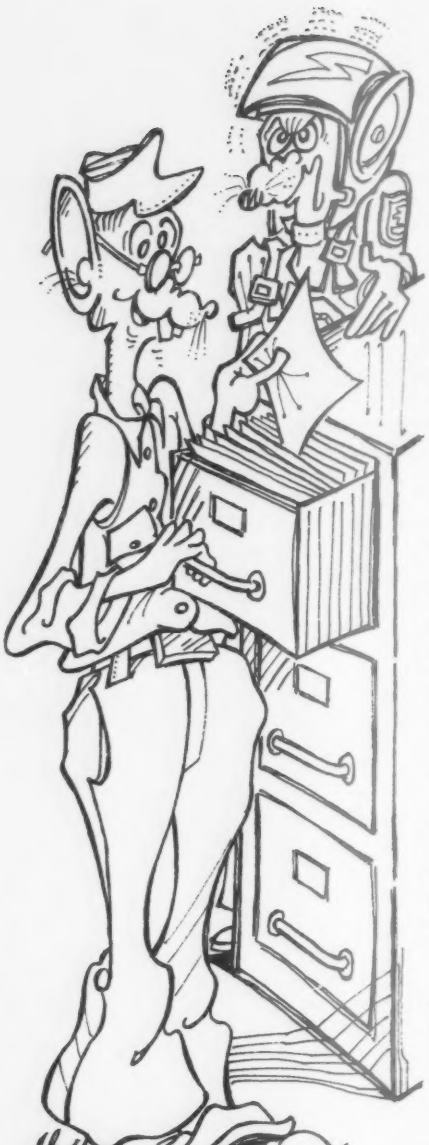
Monday morning quarterbacking has brought about a few lessons learned which, when properly executed, could have made the entire search and rescue operation more efficient. The SAR mission coordinator does not require every flyable asset from the CV to conduct a search. He can more efficiently use limited assets flying a specific pattern, rather than a large number of aircraft randomly searching. The S-3 aircraft is by far the best asset within the air wing due to endurance and aircrew familiarity with low altitude search techniques. The A-6 is a good secondary choice, primarily due to the side-by-side seating, good visibility and excellent radar. Target Recognition Attack Multisensor (TRAM) A-6s are especially useful during night searches.

In this case, initial location of the survivor was made difficult for several reasons. Not all of the search aircraft had functioning UHF/ADF receivers, and a few of the aircrews were not completely familiar with their use. This prevented rapid triangulation. Subsequently, when a probable location was determined, visual sighting was still difficult due to the high sea state and the dark color of the LR-1 liferaft (the downed crewman kept himself covered, and the chartreuse-colored panel was hidden). A possible solution to assist SAR aircraft would be to install some sort of a deployable radar reflector in each raft package.

The greatest asset was the survivor himself. He had no problems exiting the aircraft and he had no problems with parachute deployment. He sustained no disabling injuries, although after five hours in 75-degree water he suffered from exposure. The survivor also had a PRC-90 that worked. *His primary radio failed after one-half hour of operation, but fortunately he had a second one.*

Another advantage was the fact that the aircraft had flown the mission precisely as it was briefed. This enabled the SAR mission coordinator to select an area of probable search. Yet, with all these resources available it was still extremely difficult to visually sight the downed crewman. With the heavy sea state and high winds, it was hard to see a small dark raft among the swells and whitecaps. Even though it was a clear day with high clouds, these same conditions also made it difficult for the survivor to see any of the SAR aircraft, much less hear them. In fact, the downed crewman's position was finally pinpointed when he was able to hear the turboprops of the E-2 flying overhead at 21,000 feet. A datum was selected, an S-3 was vectored to that position, and when the survivor was told to "pop a smoke," the S-3 finally sighted the day flare. Even with that initial sighting, it was almost impossible for the S-3 to maintain visual contact. Smokes were dropped in the water to maintain the datum until the helo pickup could be effected.

This blue water SAR was a success due to many significant reasons, but the deletion of any one could have spelled disaster. What if the crewman had been rendered unconscious? What if he did not have a spare PRC-90? What if the water temperature had been below 60° F? (The crewman was in the water approximately five hours). And, although we all want to help a shipmate in distress, there are few platforms in the inventory capable of providing an overall picture of a SAR effort. The E-2 is one, and in a hectic situation it can use all the help it can get. At times though, when the picture becomes saturated with too many assets, that help may be no help at all. Highly recommend frequent reviews of SAR and SAR procedures which should also be a standing agenda item for every safety standdown. ◄



"My, my, aren't we the impatient ones, . . . some of these O_2 requisitions go back 28 years . . . . "

C-1 Oxygen Impasse

According to August '83 *Approach* (page 11) and OPNAVINST 3710.7 para 7, each aircrew in command of an aircraft must have continuous oxygen during flight over 10,000 feet. The MEA (minimum en route altitude) between Naples and Sigonella, for example, is 10,000 feet going west and 11,000 feet going east. C-1s have no oxygen systems onboard. Between 1979 and 1982, I tried to get O_2 (portable) systems installed but, except for being "on order," nothing else was ever done. How is this obvious safety violation continued year after year?

Nooxygenmouse

You've raised a valid point, and I may not be able to give you a really satisfactory answer but we operators have had to make do without oxygen for the past 28 years. Back in 1956 — 1958 the C-1s of VR-24 Det. at Naples had portable/walkaround oxygen bottles available for flights where it was anticipated that the flight would exceed 10,000 feet. Although NATOPS did not then exist, there was a requirement to use oxygen above 10,000 feet. (However, I'm sure that was a regulation that was broken frequently in order to meet commitments as it may be today.)

The Approach *article referred to OPNAVINST 3710.7 and the following is quoted from the latest change 3710.7K:*

Para 714 OXYGEN

Except as stated in paragraph 714a all occcupants aboard naval aircraft will use supplemental oxygen on flights in which the cabin altitude exceeds 10,000 feet.

a. UNPRESSURIZED AIRCRAFT. Unpressurized aircraft, the pilot at the controls shall use oxygen continuously. When oxygen is not available to other occupants, flight between 10,000 and 13,000 feet shall not exceed 3 hours duration, and flight above 13,000 is prohibited. (This applies to the C-1 as it is unpressurized . . . Ed.)

The following is relative to your inability to acquire portable oxygen bottles that were "on order" for a long time. NAVAIR 00-35QH2 is the Allowance List for specific aircraft. There is a walkaround oxygen unit available in the Navy Supply System (Stock No. 2RH1660-00-1711-LX). This walkaround oxygen unit is authorized for certain aircraft such as the P-3, C-2 and E-2 but not for the C-1. *(Refer to Appendix A pg 6-10 of the NAVAIR publication.)*

Therefore, since the C-1 is not on the authorized list for a portable walkaround oxygen unit, there is no doubt that the C-1 is prohibited from flying above 10,000 feet by OPNAVINST 3710.7K. If this is strictly adhered to, certain logistic commitments scheduled for the C-1 cannot be met.

It appears that the C-1 oxygen problem is at an impasse. What is needed is a change or waiver to the authorized allowance list that will allow C-1 operators to requisition the subject walkaround oxygen unit. Until that time it would appear that by definition, the C-1 is restricted from flying above 10,000 feet.

Hands Off

A pilot undergoing SAR (CH-46) training was dropped off on an island to practice rescue techniques and use of survival equipment. He was briefed about the danger of holding on/placing his hands above the jungle penetrator while being extracted. The first lift went without a problem. The second lift was to be done by the "D" ring on the torso harness. After the crewmember hooked up the pilot, the slack pulled out of the harness ring as the cable tightened. A fear of falling caused the pilot to grab the cable to preclude the "D" ring slipping out, although there was no danger of that happening. As the pilot was pulled up to the helo (with a death grip on the cable), the crane wasn't stopped until the pilot's hands entered the gearing of the winch. The pilot suffered two broken bones

ANYMOUSE

on his left index finger and substantial bruising to both hands.

The helo crew should have briefed the pilot on "D" ring extraction, should not have lifted the pilot off the ground with his hands on the cable, and should have stopped the winch before the pilot's hands entered the gearing. After getting the pilot into the helo, the corpsman noted that both bones were broken.

Although this was also a training flight for the winch operator, the pilot should have known not to grab the cable, both from his briefing and prior training at Pensacola. This shows what can happen in a canned setup. What if an actual ejection had occurred? Unless firmly memorized, procedures may be forgotten or blanked from the memory. How often do we consider what happens after the SAR helo arrives? It'll never happen to us — right? We probably need more periodic information on helo extraction procedures and what the SAR crews expect from downed crews that are being rescued.

SARmouse

Minimum of Inspection, Minimum of Survival

Recently during a squadron safety standdown, I had the displeasure of watching a demonstration where an Mk-7 (7-man) liferaft was deployed. This was only the second time in four years of flying that I had witnessed this. It surprised me that it ended the same way as the first — a failure. This raft only half inflated as one-half had two holes in it, each the size of a quarter. This wouldn't have bothered me, since I thought this raft was used for demonstration only, but much to my dismay, I was told that this raft was an RFI (ready for issue) raft that had been pulled from the squadron's flight equipment shop.

That raft could have been placed on my aircraft, to fail when the lives of the aircrew would have depended on its functioning properly. I made some inquiries and learned that every six months each raft is unpacked and checked visually and then repacked. Every fourth inspection the raft is functionally checked — once every two years is a long time to wait to find out that your raft may not work! I also inquired about percentage of proper inflations. The flight equipment man said probably 60 percent would work right.

This was beyond a doubt the most influential safety standdown I've ever attended. I now know that I must put in more time and attention to my emergency procedures, limitations, preflights and airwork, so I never wind up in the water looking.

Underinspectedmouse

NAVAIR 13-1-6.1 Section 2-2 gives the inspection requirements for liferafts. It requires that rafts be inflated each inspection cycle, meaning every six months. They must hold an inflation for four hours, which would not be possible with "quarter sized" holes. The pararigger in question misinformed you, possibly because he did not understand the rules himself. The failure of the raft in question was most probably caused by mishandling. To keep this from reoccurring, units must:

- *Make sure all pararíggers know the proper PMS procedures for the MK-7 raft.*
- *Make sure that all squadron rafts marked RFI have actually had proper inspections.*
- *Document failures of properly inspected rafts with quality deficiency reports (QDRs).*
- *Try to find the origin of any noted failures and take steps to eliminate the problem. The way that rafts are routinely stowed and handled is a good place to start.*

No reasonable inspection schedule can absolutely ensure that a piece of gear will not fail. But with a squared away PMS program and appropriate handling, equipment failures will be few and far between. ◄

What Does It Mean . . . To Get Tight?

By Lt. R. Derby
VT-3

WHAT do you do when you can't get through to the other guy in the cockpit? Communication problems in the brief or on the air can frustrate your best efforts in flight. Nowhere is this problem better illustrated than in the instructing of allied flight students.

While this article focuses on that small facet of the training command, the problems and solutions apply to naval aviation in general. Whether it's pilot to RIO, Dash One to Dash Two, or instructor to student, the background and perspective of those involved can get in the way of effective communication. If you take a nugget from New York and put him in the same cockpit with an old salt from Arkansas, you'll have a lingual and cultural gap between *Americans.*

While there are some problems unique to allied students, even some unique to certain national subcultures, there are three basic barriers that can cause a communication breakdown to occur in any situation:

a. A language barrier.
b. A cultural barrier.
c. A feedback barrier.

The cockpit of any aircraft is usually filled with military, technical and aviation jargon; it's a strange dialect to any newcomer. The most common language problems are usually the least obvious. You expect to give an explanation for "octoflugeron" or "whifferdill," but the student who stares skyward when you say "get your nose up" or takes off power when you command "takeoff power," will quite simply surprise you.

Confusion in the cockpit of a T-28 during takeoff roll resulted in a spectacular torque roll. The confusion started when an instructor used the phrase "drop your heels to the deck," instead of "put your feet on the floor," as his young allied student expected. Another young sergrad instructor

went through three successive briefs, flights and debriefs with an allied student who remained too close aboard at the abeam position time after time. Totally frustrated with repeated attempts to explain how "getting tight at the 180 degree" ruins the pattern, the instructor was ready to give up. Then in the last debrief the student finally asked a question, "Uh sir, what does it mean . . . to get tight?"

Most allied students learn "the Queen's English," before being screened by their own governments and sent to the U.S. Upon arrival here, they are sent to the Defense Language Institute, a DOD school administered by the Air Force. According to Ted Klein, Chief of the Course Design Section at DLI, "Students receive enough English instruction that failure in a particular course is most likely not due to language problems." Incoming students who score less than 80 percent on the standard screening test are sent to general English classes until they pass or are recalled by their governments. Those scoring 80 percent or better who are destined for flight school begin a nine-week aviation specialized English course. The course is based on many aviation publications and manuals. It concentrates on listening skills and written forms peculiar to aviation.

"Allied students are very literal listeners," states Klein. "If you say: 'Get your nose up,' they'll tilt their heads back as far as possible. Also their vocabularies are not extensive. To them, an anticollision light is not synonymous with an anti-smash beacon. You have to be careful and precise with your terminology."

Another surprising language difficulty deals with numbers. "Pilots tend to use fewer words and shorter sentences than most people," says Klein, "and most of the conversation is numerical." Since we learn to count before we learn to read, it is more difficult to think in a foreign numerical system than in a foreign language. If you have shopped overseas, you know how much easier it is if they write the price down for you.

Just as the way we speak may create a communications barrier, so may our cultural background. Americans, as a group, are very direct and to the point. It's considered a virtue here rather than abrupt or crude manners. An instructor may walk into a class and start off with, "today we discuss . . . " or a student may raise his hand anytime and say, "I didn't get that, could you go over that again?" Not so in many places overseas. Some societies have an almost formal greeting ritual of small talk before "getting down to business." To omit this ritual could disrupt an allied student's learning pattern.

"In cultures based on the Koran there is usually great reliance on rote memory in education and training (repetition without full comprehension)," says Klein. Thus a student may be able to reel off a beautiful verbal description of a maneuver, yet not understand how to fly it.

In many cultures there is an almost blind trust of teachers. When discussing airsickness prevention prior to an air combat maneuvering (ACM) hop, an instructor said it was important to have normal meals and then mentioned to his foreign student, in passing, that he had eaten some yogurt for lunch. The next day his student ate two quarts of yogurt prior to his ACM hop, in hopes of preventing airsickness. It was not successful. We all must be careful, or we'll teach the wrong things.

Without feedback, an instructor can't tell what has been understood. Subtle forms of feedback cue you to either continue an explanation or get on with other matters. Body language and verbal inflections are culturally distinct. A lifted eyebrow or rising inflection in the tone of an American's voice is a signal that there is an unstated question. An allied student will be sending his own signals, but you may not recognize them.

A T-34 doesn't allow visual contact, so you are completely reliant on verbal feedback. You are likely to receive much less verbal feedback from an allied student. In the early stages, an allied student will listen to a sentence, repeat it verbatim, mentally translate it into his own language, formulate an answer, and then translate his answer back into English. Obviously, the more you speak or the more he tries to answer, the greater the workload.

A well phrased question can allow an instructor to immediately understand the exact nature of a problem or question and resolve it without a lot of wasted time, effort and ques-

"Get your **nose up**! GET YOUR **NOSE UP!**

tioning. A student who is not quite so skilled with the English language is simply not able to form such incisive questions.

Many cultures do not express needs or desires as directly as we do. In Saudi Arabia when you visit a friend, your host will bring you some sort of refreshment, and you politely consume whatever it is. In the U. S., you are either offered a selection or just "a drink," and are expected to reply, "What've you got?" Klein tells of a Saudi friend who always said "Nothing, thank you," everytime a selection of drinks was offered. Finally, Klein resolved the problem by explaining to his friend that here it is not impolite to choose. His friend understood and preferred the American custom. "This way you get what you want," he observed.

An allied student is likely to be concerned with "saving face," both for himself and for you. As one of a very small minority, he will tend to feel conspicuous among his peers. It is said at ground school that not too long ago, a group of students deliberately missed test questions so the senior man would have the highest score. In some countries it is considered rude to question an instructor. It implies the instructor is too incompetent to explain a subject properly the first time. Quite often an allied student will indicate complete understanding rather than admit complete confusion. Remember that the question, "What does it mean . . . to get tight?" It wasn't asked till the third debrief.

With all these problems, how do you know if you're getting through? How can you make sure you're understood the first time? The Navy has several good films on overseas diplomacy, and the Air Force runs a cross-cultural communications course at Eglin Air Force Base. You can also try the following combined advice of 10 experts in cross-cultural instruction:

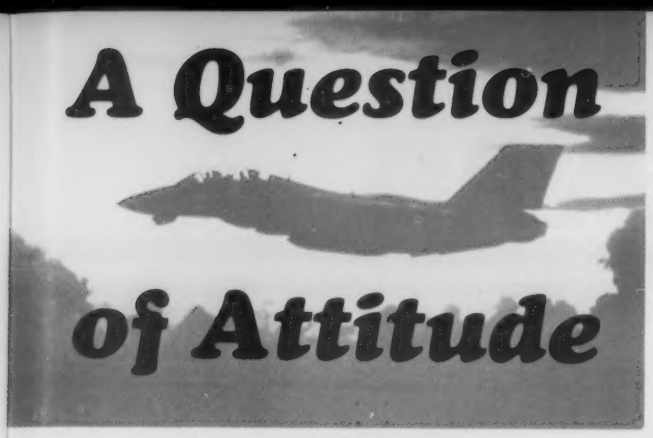
1. Performance indicates understanding. If the flying improves, you are getting through.
2. Instead of asking, "Do you understand?," ask your student to explain both the problem and solution to you.
3. Have the student analyze and point out his own mistakes, rather than listen to you merely list them.
4. Eliminate slang, slurred speech and unnecessary sea stories. A good sea story may drive your point home with an American, but it can be confusing, extraneous verbiage to an allied student. Don't increase his workload as a translator.
5. Use only standard terminology and phrases.
6. If the translating process is getting in the way, eliminate the talking. Just say, "do it like this," and then perform the maneuver exactly the way you want it done. But take care not to create dependency by overdemonstrating.
7. Allow more time for the brief and debrief. Go into much greater detail in the brief and don't neglect the chalkboard. It's much easier to remember a drawing, diagram or printed word than a verbal description.
8. Give the student a detailed itinerary of the entire hop, excluding emergencies. There is less tension and more concentration if the student knows what's coming next.
9. Assign time in the tower as penance for missed radio calls. Give half an hour of verbal practice in the cockpit trainers for a slow or fumbled checklist.
10. Insist that all procedures, course rules and emergency procedures be learned in English and recited out loud. Did you ever try to learn a foreign language by merely reading it? An airstart procedure can be a real tongue twister.
11. Finally, point out and explain the cultural differences. It may lessen their impact. Encourage your students to be direct and ask questions.

It does get easier. As the allied students gain experience with the English language and numerical systems, and with our unique society, the barriers quickly dissolve. The allied students I interviewed at HT-18 all agreed that there are few faults with the training program we offer. One Italian said, "It was hard at first, but when I learned to think in English instead of translating back and forth, it became much easier. Now when I fly, I think in English. When I'm at home, I think in Italian. It becomes quite natural. I don't even know Italian words for the aviation terms I use each day in the aircraft."

Language, culture and feedback barriers can be overcome. These barriers, though not as intense, exist in all crew coordination situations. Naval Aviation is a cultural community, a society with a language and personality all its own. If you understand these barriers, you'll handle them better. Bon chance!

"You'll be first to **taxi** out to the runway."

A Question of Attitude



By R.A. (CHICK) Eldridge
Approach Writer

PROFESSIONALISM and positive attitudes are a must in naval aviation. While the Training Command takes the basic civilian and trains him to be a pilot/NFO, it is the Fleet Replacement Squadron (FRS) that has the responsibility of refining the individual's techniques and qualifications so that he may successfully pull his own weight where it is most needed — while operating in a fleet squadron.

Enthusiasm is certainly essential to survival in aviation, but it too must be tempered by common sense, mature judgment and strict adherence to flight discipline. Had any of these three qualities been evidenced, the mishap being discussed would not have occurred.

An F-14 crew was scheduled for a night FCLP period but would have to burn down to landing weight following takeoff. Clearance was received from Departure Control to climb to 15,000 feet, but the pilot delayed his climb until reaching four miles on the departure radial. His residence was at this four-mile point on the radial, and after the flight brief he had telephoned his relatives that he would fly over his home and commence an afterburner climb.

After twice being instructed by Departure Control to commence his climb, the pilot initiated an afterburner climb in VMC which quickly turned to IMC. The F-14 was tracked on radar to a maximum altitude of 11,900 feet before a rapid descent was established. Radar contact was lost at 6,500 feet, and witnesses observed the aircraft in a steep dive before it impacted the ground. It was estimated that the aircraft was in a 40-degree nosedown attitude, 550 knots at impact. Both crewmembers were fatally injured. Although command ejection was initiated at 1,100 feet, neither crewmember survived the ejection.

Subsequent to the mishap, a reconstructed profile of the takeoff and climb was flown in the F-14 simulator using two different scenarios which duplicated the radar track. On the first simulator run a maximum performance afterburner climb was initiated at a nose-high attitude of 45 degrees. An unloaded pushover was commenced and followed by illumination of the MASTER CAUTION light (due to oil pressure fluctuations at less than one positive G flight). The control stick was programmed forward until ground impact.

On the second simulated scenario, a roll to inverted flight was initiated at the 45-degree nose-high position, rolling upright as the nose reached the horizon. Again the stick was programmed forward until impact.

The results of both simulated flight profiles were nearly identical with the impact point, being within .1 nm of the actual crash site. The time involved was within two seconds of the radar track time of 55 seconds.

Witnesses to the mishap stated that the aircraft entered broken to overcast cloud layers at 2,500 feet in afterburner and remained in IMC from initial pullup until exiting the clouds just before impact. Statements from other aircrews flying on the same night confirmed that the anticollision lights and afterburner reflecting off the clouds were very disturbing and disorienting. It was thought that the afterburner and anticollision light reflection, unusually nose-high attitude and IMC could easily have led the aircrew to experience vertigo.

One analysis of the mishap indicates that the pilot probably initiated an unloaded pushover while in an upright attitude. The radar track of the aircraft indicates the F-14 was accelerating until the pushover point. Both simulated and actual flight profiles confirm that in order to parallel the mishap aircraft's radar track, an abrupt pushover would have been required. Continuous forward stick until impact was required to maintain the reconstructed flight profile.

Following an accelerated climb, an abrupt unloading maneuver can result in a spatial illusion referred to as "inversion illusion." "Under the circumstances, the abrupt aircraft attitude change and consequent negative G force acting on the otolith organs causes a sensation of being inverted. Reflex action tends to cause the pilot to try to correct this illusory attitude by pushing the nose of the aircraft abruptly downward, thus intensifying the illusion."[1] It is most likely that the pilot's spatial disorientation was further intensified when he turned his head down and to the right to observe the caution/advisory panel after the MASTER CAUTION light illuminated. (The oil pressure caution light usually illuminates during moderate pushovers.) Immediate references to the artificial horizon would have confirmed the actual flight attitude. However, the inversion illusion is very strong and may require from 30 to 90 seconds for recovery.

In an analysis of the mishap, three questions are indicative of the underlying general attitude pertaining to this tragedy.

- What made a replacement pilot think it was acceptable to overfly his house for the benefit of his relatives?
- Why would he intentionally light full afterburner and commence a steep climb in known IMC?
- Third, why would the instructor RIO allow the student to perform such a maneuver?

Most likely these questions can be summed up by the only realistic answer — the question of attitude. It is known that there are a few pilots who deviate from established procedures and SOP, yet somehow remain undetected. Sometimes such deviations are embellished upon and such stories and exploits which result, whether fiction or fact, become generally accepted as truth during readyroom "sea stories" and hangar flying. This perception is then manifested into an attitude which is most difficult to detect. Within naval aviation there is a fine line between aggressiveness and showmanship. All hands are responsible for being their brother's keeper and for ensuring adherence to established procedures. NATOPS, SOP and FAA regulations are published to avoid mishaps such as this one. The overriding conclusion is that a replacement pilot, with an instructor NFO, appeared to exceed his capabilities in an environment predictably conducive to exceeding anyone's capabilities and specifically prohibited by SOP. ◄

[1]Air Force Pamphlet 160-5 of 23 Jan 1976

1st Lt. Randy Myers
1st Lt. C.G. Whitescarver
VMA-211

1st Lt. Randy Myers (left),
1st Lt. C.G. Whitescarver (right).

DURING pullout from a 10-degree napalm drop, Ist Lt. Randy Myers heard a loud bang from beneath his A-4M. Thinking he might have suffered some frag damage, he turned to rendezvous with his flight leader, 1st Lt. C.G "Doc" Whitescarver. He was unable to make radio contact and noticed that his generator had dropped off the line. As he extended the emergency generator, the cockpit immediately filled with smoke. The smoke was dissipated when Myers selected ram air. Next he felt the aircraft decelerate. A quick scan of his engine instruments revealed a flameout. "Doc, I have a flameout," he transmitted after pulling off the target.

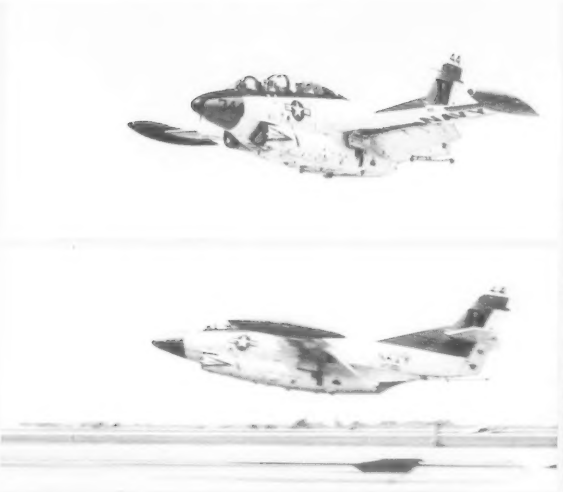
Shifting to manual fuel, he attempted an airstart at 5,500 feet MSL and 400 KIAS; it was unsuccessful. A second attempt proved successful and Myers immediately headed toward MCAS El Toro. Twenty miles from El Toro, he contacted the tower and broadcast a mayday. While descending through 3,500 feet at 300 KIAS, his aircraft experienced a second flameout. Once again his first airstart was unsuccessful, but as he maneuvered his aircraft toward the unpopulated hills west of El Toro's approach corridor, he got a relight. Still, only 75 percent rpm could be attained.

As he assessed his situation, Myers determined that with his present altitude, airspeed and distance from the runway, he could make the field if he held the landing gear until the last possible moment. He was unable to locate the runway environment and asked Whitescarver for a steer to the runway. "Check right, two o'clock," came the reply. Myers maneuvered his A-4 to arrive on runway centerline at 1,000 feet, one mile and 230 KIAS. He lowered the gear at 500 feet and one-half mile. One thousand feet beyond the threshold at approximately 180 KIAS, he touched down and deployed the drag chute. A "no sweat" landing rollout was executed, in spite of the aircraft's being 2,000 pounds over the NATOPS recommended landing weight due to excess fuel and unexpended ordnance onboard.

After clearing the runway, the fuselage fuel tank began dumping its contents onto the taxiway through a one-half by one-inch tear in the main fuel line. Inspection of the aircraft revealed that the drive/generator access (greenhouse) door latches had failed, allowing the door to detach and impact the main fuel line.

The intelligent and thorough airmanship displayed by Myers, coupled with the calm and valuable assistance of his flight leader, Whitescarver, saved a valuable aircraft and avoided a potentially disastrous situation. This achievement is particularly noteworthy, when you consider that Myers had less than 400 total hours at the time, and only 130 hours in the A-4M!

BRAVO ZULU



Photos by PH2 Joe Hornbeck

Lt. Montgomery
Ens. Keough
LSO Capt. Pistochini
VT-23

THE T-2 shuddered and lurched to the left upon touchdown — then sprang into the air as power was added to maximum rated thrust. A call from the control tower and a quick survey of the troubled *Buckeye* revealed that the port main strut had cracked and separated from the aircraft, strewing parts several hundred meters down the runway. With just over 1,000 pounds of fuel remaining, Lt. George Montgomery, VT-23 instructor pilot, and Ensign Mike Keough, student naval aviator, had to act quickly.

The squadron flight duty officer (FDO) was notified of the emergency as the crippled *Buckeye* climbed to Delta. As the FDO and aircrew went over the NATOPS procedures for the loss of main landing gear strut, the search began for an LSO to assist in the gear-up recovery. Capt. Pete Pistochini, Wing LSO, immediately proceeded to the approach end of the runway. Meanwhile the aircrew successfully retracted the landing gear.

Fighting a stiff 20-knot crosswind, the crew made two practice gear-up approaches prior to attempting the belly landing. Responding to every call from Pistochini, Montgomery flew a flawless approach, touching down on the runway centerline nearly 2,000 feet from the approach end. Keough secured the engines as the aircraft impacted the runway and a minimum run landing followed. Trailed by smoke and dust the aircraft came to rest less than 1,000 feet from touchdown. Total damage to the aircraft as a result of the gear-up landing was less than $16,000.

Professionalism exhibited by the aircrew, FDO and LSO working as a team minimized aircraft damage and prevented the possible loss of man and machine. A potential class "A" mishap was avoided by sound, timely decisions, superb airmanship and outstanding cooperation and coordination during the emergency evolution. ◄

Just when you thought it was safe to eject over water . . .

By Cdr. F. P. Riordan
VC-10

IT was a clear, sunny day when my wingman and I launched on what was to be another "routine" low-level navigation hop. Since he was one of the more experienced first tour pilots, I assigned him the lead. We launched at 0930, and until approximately 1045 the hop was uneventful. From that point until some 38 hours later the series of events that transpired was anything but "routine."

Because of a catastrophic aircraft malfunction, I ejected from my TA-4 at approximately 9,000 feet. Shortly thereafter, I was "in the silk," drifting toward what had moments before been such a beautiful ocean — funny how perspectives change. It was now time to recall everything I had been taught regarding my particular circumstances. I looked up to check my parachute — the canopy looked good with no apparent damage. I heard my wingman nearby and signalled a thumbs up. I pulled both toggles of my LPA and got my first surprise — the left side did not inflate. Not overly concerned, I reached down to deploy my seat pan (RSSK-8D). The yellow rubber seat pan release handle was severed at its forward attaching point. Somewhat dismayed, and in an attempt to examine the problem, I released the starboard Koch fitting to get the seat pan into my lap. I was unable to get it up, so I released the port Koch fitting, then pulled the seat pan into my lap to study the lock mechanism. After only a cursory glance at it, and noting the rate at which the sea was approaching, I mentally classified this project in the "too hard to do now" category. I placed the seat pan between my legs and got out my PRC-90 survival radio. I turned it on and made one transmission to my wingman. He never heard it. He had secured his guard receiver since the aircraft beeper was too distracting. I checked the approaching sea one more time and, realizing water entry was imminent, discarded my seat pan.

Parachute release was simple, quick and free of shroudline entanglement. Immediately, I orally inflated the left side of my LPA. At this point I took a moment to assess my situation. I was fortunate enough to have no bodily injuries, and my mental processes seemed to be in normal working order. Knowing it would be at least two hours before any SAR aircraft arrived on-scene, I set about planning my course of action. I inventoried what survival gear I had and spent an uneventful few hours waiting for help. It was during this period that I noticed that the whip antenna to my PRC-90 was missing. It was in my hand at water impact and I assumed that it had broken off then.

At approximately 1345, I spotted what I assumed to be a SAR aircraft. It was heading directly toward me, and as it approached, I readied my MK-13 flare. When it was about a mile away, I pulled the clip to ignite the flare, and nothing happened. No problem, I thought, "I'll ignite the night end — they'll be able to spot that." Again nothing happened. By this time the aircraft, a C-131 had passed overhead. I cautiously sneaked a glance at both ends of my flare. They were both mushy, and I assumed this prevented their ignition. I then spotted a second aircraft, a Navy C-12. It too was headed in my direction. I fired one pencil flare which apparently went unobserved.

By this time all my survival equipment was tangled in the lines attaching it to my vest. I had taken out the radio, a MK-13 flare, pencil flare gun and the shroudcutter. Entanglement was hampering the height at which I could place

"Around sunset, I encountered my first shark."

the pencil flare gun, and since I had noticed that the flare holder was broken, I decided to put the flares in my flight suit pocket and cut away the damaged flare holder. Although the flare holder was attached individually to my vest as it should have been, the pencil flare gun had been tied to the flare holder instead of the vest. I cut the line attaching the gun and set it in my lap while trying to cut the other line and get another flare. When I went to retrieve the gun, it was gone. For survival gear, I now had a radio which was useless, a strobe light, a mirror, four ounces of drinking water and a shroudcutter. Since both aircraft remained in my vicinity, often flying overhead or in proximity to me, I attempted to signal them with my mirror. The mirror was a flat piece of metal with a hole in the center. I had expected to find my trusty glass-type mirror. I attempted to use the metal one without success. The top of a Budweiser can would have been as effective and certainly more enjoyable. Essentially, I was now down to a strobe light and four ounces of drinking

water. I considered the shroudline cutter to be useless to me at this point.

As sunset approached, I saw one more aircraft about 10 miles away. Further attempts to attract it with my mirror proved futile. As darkness descended on the Caribbean, I settled in for a long night, still confident that with the aid of my strobe light my chances of being spotted were good. Dutifully, I attached the strobe light to my helmet, which was 100 percent covered with reflective tape, and when complete darkness surrounded me, I activated it. Throughout the night I neither saw nor heard another aircraft. It was a long evening. Although I was unable to sleep due to sea water getting into my eyes, nose and mouth, I was able to relax and remain fairly comfortable.

At sunrise, I heard the next aircraft, about 10 miles away. It came toward me, passing only a few hundred yards away but kept going. My confidence in the ability of a search aircraft's crew to spot me was beginning to wane. It was then that I decided to start swimming for land. I looked around for a while, trying to get my bearings. In two areas, I could see the beginnings of cumulus buildups. My meteorological training convinced me that chances were good that these formations would be over land.

I started swimming toward what appeared to be the closest area. It is extremely hard to swim any kind of stroke on your stomach wearing an inflated LPA. I limited myself to the backstroke, with an occasional sidestroke for variety. Progress was slow. The aircraft I had seen earlier came by twice more at approximately one-hour intervals. It was obvious that he was flying a SAR search pattern, but that I was just outside of it. Each time he got close to me, he banked away at the last minute.

By noon that day, I didn't think I was any closer to land than when I had started swimming. In fact, now that the morning haze had burned off, the cloud formations looked even further away. Again I stopped to reassess my situation and to better orient myself. Although I continued to see aircraft from time to time, I was rapidly losing hope. I was still convinced that my best chance for survival lay in my ability to swim. I was able to reasonably estimate direction using the sun and contrails. I had spent the entire morning swimming west toward the eastern end of Cuba. I reasoned that Great Inagua was closer and started swimming southwest. I swam until sunset. I never saw land, but I had a gut feeling that I was close. As it turned out, however, I had only travelled about 20 miles, less than half the distance to Great Inagua.

Around sunset of that second day, I encountered my first, and fortunately only, shark. First, I noticed his fin circling me. I assumed a fetal position, arms around my legs, to give him as small a target as possible. I was still wearing my flight boots, torso harness and G-suit. I remained motionless for a few minutes and he went away. Those minutes seemed like hours. I resumed swimming, and about five minutes later, I saw the shadow of what I thought was a turtle in the water. I looked beneath the water and was chagrined to see the same shark. I repeated what worked earlier; he went away and to my relief, did not return.

By this time I had completely given up being spotted by any SAR aircraft, so I decided to rest and recuperate from the day's swim. Night descended rapidly. After about 30 hours in the water, I still had half of my four ounces of water left, and a rapidly dying strobe light whose intensity and frequency were severely diminished from the prior evening's workout. About 2030 that evening, I was relaxing although still unable to sleep. Suddenly, I heard another aircraft approaching from behind. I turned around, grabbed the strobe light from my vest and activated it. An eternity later, it came on, just as a P-3 was about to pass over me. For a moment I thought he hadn't seen me, but after flying about one mile past me he banked steeply and flew back overhead, with searchlights on. Four hours later I was aboard a Coast Guard helicopter heading for Grand Turk Island.

Throughout the entire experience, Murphy's Law drove events nearly unabated. There are many lessons to be learned from this experience. Many of them are obvious, but they bear repeating.

- No mission, sortie or launch is routine — when you least suspect the worst to happen — it will. It is trite, but true; be prepared for it. As it happens, my wingman and I, during the course of our brief, discussed action to be taken in the event that disorientation or straying from intended track occurred. The fact that he got the SAR effort going and that both of the first aircraft to arrive on the scene flew directly overhead are tributes to his professionalism and ability to accurately fix my position in an area completely devoid of NAVAIDS or topographic landmarks.
- Keep in mind that all training you receive is generic in nature. When you encounter the unexpected, your training may not relate, and you must improvise.
- Learn as much about your survival equipment as you can before you have to use it. An actual survival situation is a poor training arena.
- Survival is an attitude. When Murphy's Law causes problems, having the confidence that what you are doing will work is the only solution. Although in the later stages of the experience I had given up hope that I would be spotted by a SAR aircraft, I had great confidence that I would make it through the ordeal.

Some recommendations as a result of the experience may be pertinent:

a. That the Navy publish more detailed information regarding the capabilities and limitations of, as well as the recommended procedures for, using personal survival gear. The fact that I operated my strobe throughout the first night has been a subject of some criticism. However, I had always been taught that was what it was for, since it could be seen for miles by a SAR aircraft. This seems to me to be the chicken/egg problem: Do you operate a strobe light so an aircraft can spot you, or do you wait to spot an aircraft, then activate the strobe? Little did I know that such an action would so severely degrade its capability. Having written to and received technical information from the manufacturers, I am still ignorant regarding its capabilities and its remaining usefulness when used over a given period of time. Furthermore, I had never seen, during my 17 years in the Navy, a mirror of the type that was in my survival vest. I later learned that there was yet a third type which I might also have expected to find; one requiring two hands to operate.

b. That Navy crews be given extensive training in "other than ideal" survivor situations.

c. That the feasibility of developing a tethered balloon

painted bright international orange with radar reflectivity be investigated.

d. That the Navy rethink the 24-hour survival philosophy. This is not to imply that more charms, C-rations or living accommodations ought to be considered, but rather survival gear with longer useful life be procured.

e. That until a more coordinated effort is organized, assuming a reasonably known position, the sky be saturated with maximum aircraft to increase the probability of the early find.

I can't say enough about the professionalism of the Navy aircrew who spotted me, the Coast Guard crew that retrieved me or the people at Grand Turk Island who attended to me upon my unexpected visit. I won't forget them or my experience. I will forever be grateful for the water survival training the Navy has provided. All I can say for the "SAR Czar" and his people is to keep up the good work.

The aviation training model manager recently submitted a proposed series of NATOPS mechanicals on emergency egress/survival. Many of the items addressed in this proposal are pertinent to this article, including:

- *A method of opening the RSSK-8 with a survival knife is clearly depicted and is shown as an alternate method of opening the seat pan should the RSSK release handle fail.*
- *Proper procedures for the operation of the Mk-13 Mod O day/night distress signal flare are clearly shown. (In the case it is unknown if the flare was out of date or from a bad lot.)*
- *Concerning the Mk-79 pencil flare, the proposed graphics clearly show the flare gun connected by a lanyard to the bandolier.*
- *Specific parachute descent procedures regarding failure of one side of the life preserver are not currently addressed in NATOPS, and are being investigated.*
- *Concerning the SDU-5/E strobe light, a safe rule of thumb is a limit of "40-60 flashes per minute for approximately 12 hours." Liaison has been established with the model manager recommending information be included concerning battery conservation.* ◄

SAFETY WORD SEARCH

By AT1 Steven J. Ludwig, AMS1 Thomas J. Eaton and AZ2 Warren E. Wittcop, VQ-4

Using the words in the two right hand columns, circle the appropriate letters needed. Words may be spelled forward or backward, horizontally, vertically or diagonally. When you are finished, with the remaining letters, see if you can find the hidden *safety message*.

P	P	S	E	L	G	G	O	G	P
A	I	N	O	I	S	E	R	R	T
W	E	L	V	D	E	N	E	E	N
A	A	H	S	O	T	V	L	P	E
R	O	S	A	F	E	T	Y	O	D
E	S	S	O	N	D	I	A	R	I
R	R	H	T	L	A	E	H	T	C
M	F	I	N	J	U	R	Y	P	C
H	O	L	F	A	L	L	R	I	A
N	M	E	D	I	C	A	L	F	E

Accident
Aid
Aware
C.P.R.
Fall
Fire
F.O.D.
Goggles
Health
H.M.R.
Injury
Medical
Noise
OSHA
Prevention
Report
Safety
Slip

Saga of Lt. CANDOO HACKITT

By Lcdr. Ron Ayres
Naval Safety Center

It was a day of days, perfect for flight,
CAVU was called and CAVU was right.
The pilots all yearned to get in the air,
And those who weren't scheduled cried out "unfair"!

When the days were cloudy, the airplanes were fine,
But now in "severe clear" they died on the vine.
The old ploy "seniority" was brought into play,
And the seniors went flying, while the junior guys stayed.

"Kick the tires, light the fires," was the order of the day
As in they strapped, briefed on Guard, and went upon their way.
Then out on the ramp there arose such a racket,
For manning up last was Lt. CANDOO HACKITT.

The last possible airplane that might fly that day,
Was given to the pilot who never said "nay."
The stories of his daring had spread far and wide,
Compound emergencies he took in his stride.

As he approached his machine with a practiced eye,
It didn't look good, (but then look at that sky!)
One flap was drooping, the canopy cracked,
Candoo said, "I'll down it . . . when I get back."

The turbines were chipped; just a few blades missing,
(A fully up airplane? what fanciful wishing!)
One tire was bald, the other was flat,
Candoo said, "I'll down it . . . when I get back."

Hydraulic fluid in puddles, and JP-5 leaks,
And corrosion flaking off as he climbed in his seat.
The droptanks were all askew on their racks,
Candoo said, "I'll down it . . . when I get back."

A few instruments missing, a bind on the stick,
And the throttle wouldn't move 'til he gave it a kick.
The plane captain trembled and raised quite a flap,
Candoo said, "I'll down it . . . when I get back."

The airplane started with a grind and a shudder,
But Hackitt didn't scare, he just got tougher.
All eyes were glued and there was many a prayer,
As he straggled from the ground, parts dropping in air.

Time passed slowly for the scheduled 1+45
As the squadron waited for HACKITT to arrive.
Finally at the time of 3+10
The search was started, and the worry began.

Through all the countryside high and low
Airplanes, SAR HELOs, and jeeps did go.
Not a trace was found of pilot or plane,
And many a finger was pointed in blame.

But the moral of the story is "CAVU CLEAR,"
The seven words of fate are words to fear.
Don't let them engrave on your last plaque,
"I'll down it . . . when I get back."

LETTERS

LSEs Ignored

FPO San Francisco — The *Weekly Summary* of Aircraft Mishaps (No. 6-83) contained an article titled "Comfortable Rhythm," which described a mishap that occurred during a VERTREP evolution. One sentence of the article states, "... The pilot at the controls ignored the LSE's hover signal ...." As a nonaviator onboard a ship at sea, I have watched many VERTREP evolutions, and I find that more often than not, the LSE is ignored, especially during waveoffs. This is most common when the deck crew has not sufficiently cleared the flight deck area of the last VERTREP load. Paragraph 1.1.14 of NWP 42 states about the LSE: "His signals are advisory in nature, with the exception of waveoff and hold, which are mandatory." While NWP 42 is not a NATOPS publication, those directions are very explicit. If the LSE is going to be ignored, then we might as well get him off of the deck and out of the way. A worse reason for ignoring his signals might be the fact that the LSE on a small platform is not an "aviator." I certainly hope that most helo pilots understand just what his function is. His job, for which he is generally well trained, is too essential to be ignored. He is out there for a purpose. In the article mentioned above, if that pilot had paid the slightest attention to him, that casualty would have been averted. But, the pilot did not. The results speak for themselves.

Lcdr. L.G. Williams, Jr., USN
Engineer Officer/Safety Officer
USS England (CG 22)

• The LSE is a valuable part of the whole helo evolution and all helo pilots are aware of the invaluable services which he provides. The vast majority of the time he is not ignored, but on a few occasions his signals may be properly disregarded. The pilot is receiving inputs from the "hole" crewman, the second crewman, copilot, tower personnel and his own five senses in addition to the LSE. What the pilot chooses as the best course of action is the result of *all* of these inputs and may not necessarily be what the LSE thinks the pilot should be doing.

A Different Breed of Regs

Williams Air Force Base, AZ — Believe it or not, Air Force people read your Navy magazine. I'm an Air Force instructor pilot with over 3,200 hours.

We have repeatedly heard that Navy regs state what you *cannot* do and that Air Force regs state what you *can* do. Think about that ....

Now, I have an example: Reference *Approach* article "Running on Empty," Aug 83. Declaring minimum fuel is a "judgment" term defined in OPNAVINST 3710.7. The intrepid pilot's attitude of "you'll sound and feel pretty silly declaring minimum fuel in a VFR pattern," is interesting.

Air Force regs state — declare minimum fuel any time you expect to land with less than xxxx pounds.

Point is, plan your fuel and trip so you won't sound "silly" on the radios or anywhere.

Greg Weil, Capt.
USAF

• A good call, Captain, and one we heartily endorse. Once the going gets a little sticky, however, it's better to feel silly than explore the alternatives.

Dear John

The Sep 83 *Approach* was still great even in its short form, however, if the printing, like on page 9, gets any smaller please send a microscope. Keep up the fine work.

D.K. Isaly
Major, USMC
MCAS Iwakuni, Japan

Want to be a famous writer?

Norfolk Naval Base Civilian Personnel Office (NBPCO) has just announced two job openings for *Approach* magazine. One is a GS-1082-11 Writer-Editor, the other a GS-1083-11 Technical Writer-Editor (Aviation). What all this means is that we need two people to write for *Approach*, full-time, at NAS Norfolk, Virginia. The GS-11 salary starts at about $24,500. To apply, send in a Standard Form 171 — Personal Qualifications Statement and a Standard Form 15 (for veteran's preference) to:

Naval Base Civilian Personnel Office
Headquarters, Naval Base Norfolk
Bldg. N-26, Gilbert Street
Norfolk, Virginia 23511

Reference vacancy announcement numbers JB-31/83ML for the GS-1082 position or JB-30/83ML for the GS-1083, or both.

Forms can be obtained at many U.S. Post Offices, or by writing the address above. Applications must be in by close of business 9 December 1983. If you have any questions, call Jane Brewer at NBCPO, telephone (804) 444-7542, Autovon 564-7542, FTS 954-1322 or call me at (804) 444-1321, Autovon 564-1321 or FTS 954-1322.

Lt. John Flynn
Editor

Sliding into Home Plate

By Ltjg. Paul E. Heinmuller, Jr.
VP-11

The curve ball. Duty runway is 1R, wind 340 degrees at 15 knots, RCR is two, visibility three-quarters of a mile in blowing snow. It is 0515 local and the P-3 aircrew is returning to NAS (frozen) Home Plate after a late evening alert launch to cover an ASWEX* period (there are numerous red eyes in the flight station). Requested approach is a GCA to a full stop. The crew is aware of the weather conditions, but forgets to compute "landing ground roll distance" and neglects to brief their land/waveoff point. It is the new third pilot's turn to land.

The hit. The approach is shot fast and high all the way. Runway approach lights are acquired one mile out, but because of blowing snow covering the runway surface, the centerline is difficult to pick out and the numbers are not visible (depth perception is lost). The 3P wants to impress the crew with a smooth landing. The scene is now set for the obvious error . . . they land *long* and *fast!* (After all, smoothness counts, right? *Wrong!* Not under these conditions). Rapid reverse is used — white-out! Buns pucker as the 4,000-foot marker goes by with airspeed indicating 90 knots. Aircraft swerves to and fro as crosswinds are fought . . . 2,000 feet remain with airspeed now indicating 45 knots and the aircraft developing a hard left swerve. "Oh, #$%@!," out come the E-handles** as the aircraft slides past 500 feet remaining.

Will our player be safe at home plate?

The fateful umpire's call . . . safe! This time. This aircraft stayed on the hard surface except for the nosewheel which impacted a snow bank in the overrun area. Fortunately the only damage was to the aircrew's pride.

Postplay analysis. It could have been worse, *much* worse. When the chore of digging out driveways, scraping ice from auto windshields and cold weather air ops become *routine*, stand by. You're flirting with disaster. It's a long, cold winter. A thorough review of NATOPS cold weather procedures, squadron stan notes and your own personal limitations may preclude an "instant replay" of this scenario. There is *nothing* routine about cold weather air ops.

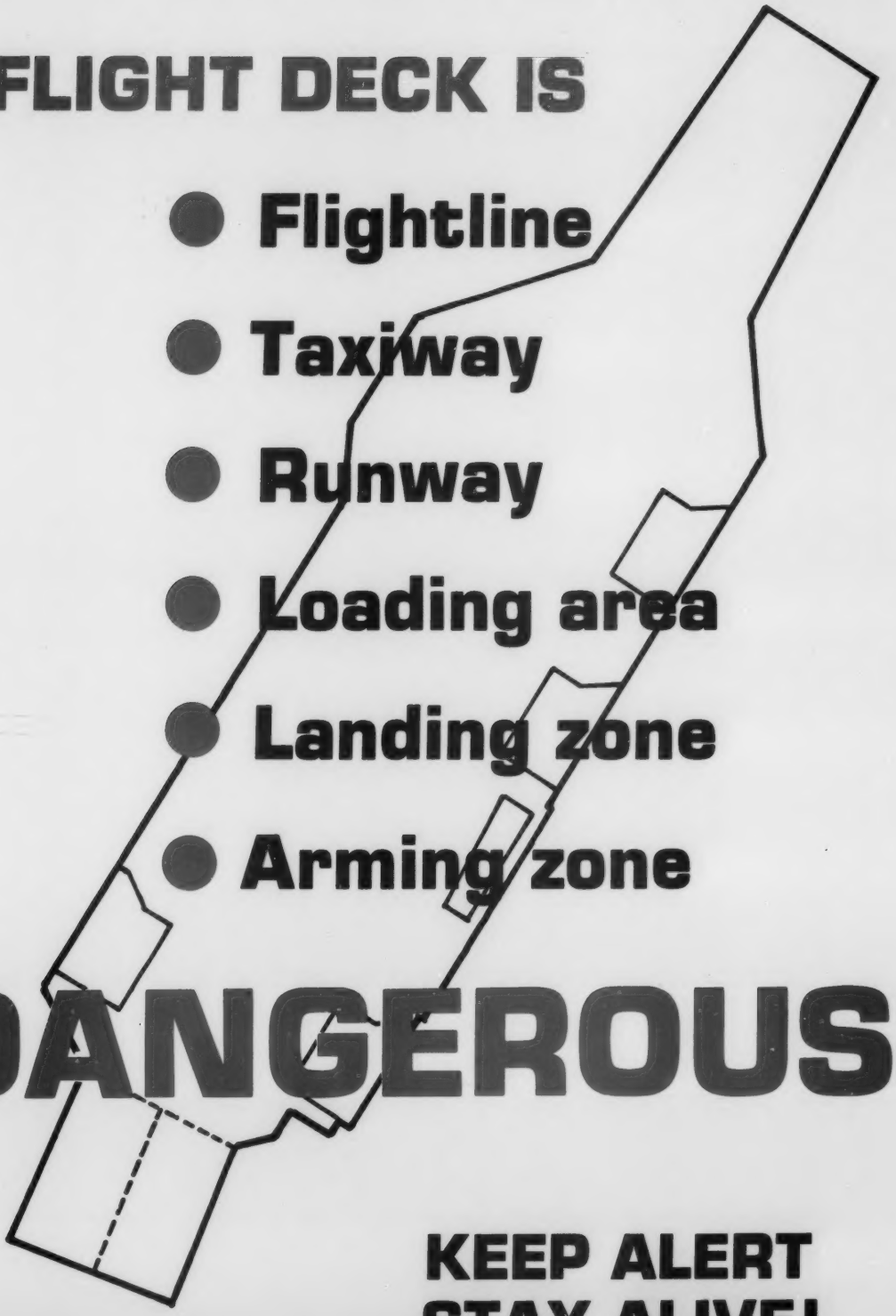
Batter up?

*anti-submarine warfare exercise

**emergency engine shutdown levers

A FLIGHT DECK IS

- Flightline
- Taxiway
- Runway
- Loading area
- Landing zone
- Arming zone



DANGEROUS!

KEEP ALERT
STAY ALIVE!

Naval Safety Center
NAS Norfolk, Virginia

Poster idea contributed by Capt. Paul B. Barron, ASO, HML-167.

TARGET FIXATION